APPENDIX I

GLOSSARY

ABS—An abbreviation for "anti-lock braking system."

ABS SWITCH—Sensor that monitors hydraulic system pressure and controls the pump motor in an ABS application.

AC—Alternating current.

AC GENERATOR—A device that produces alternating current; an alternator.

ACTUATOR—A device that performs an action or outputs a signal in response to a signal from a computer.

AIR BRAKES—Vehicle brakes actuated by air pressure.

AIR COMPRESSOR—A pump that forces air, under pressure, into a storage tank.

ALTERNATOR—An ac generator.

ALTERNATOR BEARING—Needle- or ball-type bearings used to provide a low friction surface for a rotor.

AMMETER—An electric meter that measures current, in amperes, in an electric circuit.

AMPERE—A unit of electric current flow measurement.

ANTI-LOCK BRAKE COMPUTER—ECM that accepts wheels sensor inputs and controls braking of the vehicle.

ANTI-LOCK BRAKES—Computer controlled brakes that will not "lock" and permit the wheels to skid.

ANTI-RATTLE CLIPS—Metal components designed to keep brake pads from vibrating and rattling.

ANTI-SKID SYSTEM—Another name for anti-lock braking system.

ARMATURE—Rotating support for multiple windings in a motor.

ASPECT RATIO—The relationship of tire height to width or profile.

AUTOMATIC TRANSMISSION—A transmission that does not have to be shifted manually.

AUTOMATIC TRANSMISSION FLUID—Oil with special additives to make it compatible with friction clutches and bands.

AUTOMOTIVE CLUTCH—A mechanical device used to connect and disconnect a manual transmission from engine power.

AXLE—A cross support on a vehicle on which supporting wheel, or wheels, turn(s).

AXLE END PLAY—In-and-out movement of the axle, adjusted to specification by using shims.

AXLE SHAFT RETAINER—Devices that attach to the outside of an axle housing to prevent the axles from sliding out.

AXLE SHIMS—Used between the axle housing and retainer to limit end play of the axle.

BACKLASH—The backward rotation of a driven gear that is permitted by clearance between meshing teeth of two gears.

BACKING PLATE—A component that holds the shoes, wheel cylinder, and other parts inside a brake drum.

BACKUP LIGHT SWITCH—An electrical switch that completes a circuit to the backup lights whenever the reverse gear is engaged.

BALL JOINT—Swivel joint that provides free movement for the steering knuckle and control arm.

BALL SOCKETS—Component that allows motion in up-and-down and side-to-side directions.

BAND—Metal strap with frictional material lining that can clamp a clutch drum in an automatic transmission to stop its rotation.

BAND ADJUSTMENT—Checking and altering tightness of automatic transmission bands as necessary for proper operation.

BATTERY—A device consisting of two or more cells for converting chemical energy into electrical energy.

BATTERY ACTIVATION—Filling and charging a dry-charged battery before installation.

BATTERY CABLES—The heavy wires connecting the battery to the electrical system of the vehicle.

BATTERY CAPACITY—The rating of the current output of a battery.

BATTERY CHARGE CONDITION—The state of the battery plates and electrolyte.

BATTERY CHARGER—A device for restoring a battery to a proper electrical charge.

BATTERY DRAIN TEST—A method of checking for unusual current draw with the ignition key off.

BATTERY LEAKAGE TEST—A check to determine if current is discharging across the top of the battery case.

BATTERY LOAD TEST—A test for battery capacity, made under full electrical load.

BATTERY TERMINAL TEST—A test for good contact between the cables and terminals.

BATTERY VOLTAGE—For batteries used in modern vehicles, 12.3 volts.

BATTERY VOLTAGE TEST—A check of the battery charge with a voltmeter.

BEARING NOISE—A constant whir or humming sound due to damage or wear of bearings in the carrier or axle assemblies.

BELTED BIAS TIRE—A bias-belted tire with extra belts added beneath the tread area.

BELTS—Fabric made of steel or other material that is placed between body plies and tread.

BENCH BLEED—Method of filling and hand pumping a master cylinder before installation to remove trapped air.

BIAS PLY TIRE—One with plies running at an angle from bead to bead.

BLEEDER SCREW—Fitting on the top of the brake caliper that allows air to be bled from the system.

BLEEDING—Process of removing any trapped air from a hydraulic system.

BRAKE BOOSTER—Component operated by vacuum or power steering system to decrease braking effort needed.

BRAKE LINES—Metal tubing and rubber hoses connecting the master cylinder to the wheel brake assemblies.

BRAKE PADS—Replaceable friction surfaces mounted on the caliper of a disc brake system.

BRAKE PEDAL ASSEMBLY—Foot lever for operating the brake system.

BRAKE PEDAL VIBRATION—Pulsing movement of the brake pedal, usually caused by out-of-round brake drum or warped rotor.

BRAKE SHOES—Curved, replaceable friction surfaces used with drum-type brakes.

BRAKE SYSTEM—Components that are used to stop a vehicle.

BRAKE SYSTEM FLUSHING—Removal of all old fluid by pressure bleeding, then replacing it with fresh fluid.

BRAKE WARNING LIGHT—Dashboard indicator that warns of low brake system hydraulic pressure.

BRAKING RATIO—Comparison of front wheel to rear wheel braking effort.

BRAKE-AWAY TORQUE—The amount of torque required to make one axle rotate the clutches in a limited-slip differential.

BRUSHES—Sliding electrical contacts that ride on the slip rings of a generator.

BURNED FLUID—A condition caused by overheating due to slippage of the transmission bands.

CALIPER—A disc brake assembly that holds the brake pads and the wheel cylinder.

CAMBER—The inward or outward tilt of a wheel assembly.

CASE BEARING PRELOAD—The amount of force pushing the differential bearing together.

CASTER—The forward or backward tilt of the steering knuckle.

CASTER-CAMBER GAUGE—An instrument with bubbles that indicate the degree of tilt.

CELL—Electrical energy storage device, consisting of negative and positive plates immersed in a conductive fluid (electrolyte).

CELL VOLTAGE TEST—A check of individual battery cells for correct charge.

CENTER SUPPORT BEARING—A ball or roller bearing unit that supports the middle of a two-piece drive shaft.

CHARGE INDICATORS—Dash-mounted warning light, voltmeter, or ammeter used to show charging system status.

CHARGING—Current flowing into a battery from an alternator.

CHARGING SYSTEM—One that uses an alternator to replace the electrical energy drawn from the battery during starting.

CHARGING SYSTEM OUTPUT TEST—A measurement of current and voltage output of the charging system under load.

CHARGING VOLTAGE—Alternator output that is higher than battery voltage, between 13 to 15 volts.

CHASSIS—The frame and other parts of a vehicle, other than the body.

CIRCUIT RESISTANCE TEST—Measurements of resistance in the insulated and ground circuits of the system.

CLUTCH—A device that allows the operator to engage or disengage the engine and transmission.

CLUTCH ADJUSTMENT—A process of setting the correct amount of free play in the release mechanism.

CLUTCH CABLE—A simple mechanical arrangement that uses a cable to transmit clutch pedal movement to the clutch fork.

CLUTCH CHATTER—A condition in which the clutch severely vibrates as the vehicle accelerates.

CLUTCH DISC—A disc that is splined to the transmission input shaft and pressed against the face of the flywheel.

CLUTCH FORK—A lever that forces the throw-out (release) bearing into the pressure plate of the clutch.

CLUTCH LINING—Frictional material riveted to the face of the clutch disc.

CLUTCH LINKAGE—A mechanical arrangement of levers and rods that transmits force from the clutch pedal to the clutch fork.

CLUTCH PEDAL FREE PLAY—The distance the clutch pedal moves before the throw-out bearing acts on the pressure plate.

CLUTCH RELEASE MECHANISM—A cable or linkage permitting the operator to disengage the clutch with the foot pedal.

CLUTCH SLIPPAGE—A condition in which engine rpm increase without increase in the vehicle road speed.

CLUTCH START SWITCH—A safety switch that prevents the starting motor from operating until the clutch is disengaged.

COIL—A transformer used to step-up the battery voltage (by induction) to the high voltage required to fire the spark plugs.

COIL SPRING COMPRESSOR—A tool used to compress a spring for removal or installation on a vehicle safely.

COIL WIRE—A conductor carrying high voltage from the coil to the distributor.

COLD CRANKING RATING—The amount of current a battery can deliver for 30 seconds at 0°F.

COMBINATION VALVE—One valve that functions as a metering valve, proportioning valve, and a brake light warning switch.

COMMUTATOR—Sliding electrical connection between the motor winding and brushes.

COMMUTATOR END FRAME—The end housing on a motor that holds the brushes, brush springs, and shaft bushing.

COMPUTER—Electronic device used to control many systems of modern vehicles.

COMPUTER-COIL IGNITION—A distributorless ignition system using sensors, a control unit, and multiple ignition coils.

COMPUTER VOLTAGE REGULATOR—A device that provides a smooth dc voltage for circuits and devices controlled by the computer.

CONDENSER—An electrical component in contact point of distributors that prevents arcing as points that open and close.

CONSTANT VELOCITY U-JOINT—One that uses two cross-and-roller joints connected by a centering socket and center yoke.

CONTACT PATTERN—The area of a gear tooth where the matching gear tooth physically contacts it.

CONTACT POINT REGULATOR—An older type regulator that has been replaced by the electronic type.

CONTACT POINTS—A spring-loaded electrical "make/break" switch contacts.

CONTROL ARM BUSHING—A sleeve that allows the control arm to swing up and down.

CONTROL ARMS—Movable lever arm that forms part of the suspension system of the vehicle.

CONVERTER HOUSING—Case containing the fluid coupling (torque converter) used with an automatic transmission.

CURB HEIGHT—Distance from a given point on the vehicle to the ground.

CURB WEIGHT—Weight of the vehicle with a full gas tank and no passengers or cargo.

CURRENT—The flow of electrons through a conductor.

CUSHIONING SPRINGS—Flat springs under the friction material on the clutch disc that helps smooth the clutch engagement.

CV—Constant velocity.

DC—Direct current.

DC GENERATOR—A device that produces direct current.

DEAD AXLE—A solid, straight rear axle on a front-wheel drive vehicle.

DEAD BATTERY—One that has become completely discharged.

DIAGONAL-BRAKE SYSTEM—A brake system with separate hydraulic circuits connecting diagonal wheels together (RF to LR and LF to RR).

DIAGRAMS—Drawings that are used to show wiring, vacuum, or hydraulic systems.

DIAPHRAGM SPRING CLUTCH—A clutch that uses a single diaphragm spring, rather than several coil springs, to help release the clutch disc.

DIFFERENTIAL—An assembly of gears used to provide power to the rear axles and allow them to rotate at different speeds as necessary.

DIFFERENTIAL CARRIER—Component used to mount the differential assembly on the rear axle housing.

DIFFERENTIAL CASE—Case that holds the ring gear, spider gear, and inner ends of the axles.

DIFFERENTIAL LUBRICANT—A heavy oil used to reduce friction between differential components.

DIFFERENTIAL YOKE—Component that connects the rear universal of the drive line to the differential.

DIMMER SWITCH—Control for high beam and low beam headlamp functions.

DIODE—Electronic device that allows current flow in only one direction.

DIODE TEST—A check for open and shorted conditions in a diode, using an ohmmeter or special test equipment.

DISC BRAKES—Brakes using a caliper that clamps against a rotor for stopping.

DISC BRAKE SERVICE—Procedure involving worn pad replacement, caliper rebuilding, rotor surfacing, and system bleeding.

DISC RESURFACING—Machining the rotor surface to remove wear marks or correct runout.

DISC RUNOUT—Amount of side-to-side movement of the brake rotor.

DISTILLED WATER—Water that has been purified.

DISTRIBUTOR CAP—A plastic, insulating cover that encloses the distributor rotor and other components.

DISTRIBUTOR POINT GAP—Recommended distance between points when fully open.

DISTRIBUTOR TESTED—Test device used to check operation of an ignition system distributor.

DOT NUMBER—The Department of Transportation code that indicates the tire has passed a required safety test. Also identifies manufacturer, construction type, and other data.

DRAGGING BRAKES—Brakes that remain partially applied, even though the brake pedal is released.

DRAGGING CLUTCH—Failure of the friction disc to disengage from the flywheel fully, even though the clutch pedal is depressed.

DRIVE CHAIN—A chain used with some longitudinally mounted engines to transfer power from the engine crankshaft to the transaxle.

DRIVE HOUSING—Case surrounding the pinion gear on the starter motor.

DRIVE LINE—The parts that transfer power from the transmission to the drive wheels.

DRIVE SHAFT—Steel tube that transfers rotating motion from the transmission to the rear wheel of the vehicle.

DRIVE SHAFT ANGLE—The angle at which the drive line meets the differential or transmission.

DRIVE SHAFT ASSEMBLY—Components between the transmission and differential, including front and rear yokes, universal joints, and a drive shaft.

DRIVE SHAFT BALANCE—Equal weight distribution around the axis of the shaft.

DRIVE SHAFT NOISE—Sounds typically caused by worn U-joints, worn slip joints, or a faulty center support bearing.

DRIVE SHAFT RUNOUT—Lack of straightness due to being bent or because of U-joint wear.

DRIVE SHAFT VIBRATION—A rapid oscillation caused by a shaft imbalance or excessive shaft runout.

DRIVING HUB—Mounting for the wheel on the end of the axle.

DRUM—The housing that holds the parts of a clutch assembly for an automatic transmission.

DRUM BRAKES—System that forces brake shoes against the inside of a rotating drum to stop a vehicle.

DRUM BRAKE SERVICE—Process that involves dismounting, disassembling, cleaning, and replacing parts as necessary. Usually, shoes are replaced, wheel cylinders are replaced or rebuilt, and the drum is turned. System is then reassembled, bled, and tested.

DRUM GRINDING—A process done to remove hard spots on a brake drum.

DRUM MAXIMUM DIAMETER—Largest inside diameter allowed for safe operation of drum brakes.

DRY CHARGED—Battery is filled with electrolyte just before being installed in a vehicle.

DUAL MASTER CYLINDER—Brake system pump with two pistons and fluid reservoirs for safety.

DWELL—The amount of time distributor points remain closed between openings.

DWELL METER—One that measures point setting in degrees of distributor rotation.

DYNAMIC IMBALANCE—Tire imbalance that causes both up-and-down and side-to-side movement while rotating.

ECM—Electronic control module, another name for an automotive computer.

ECU—Electronic control unit, another name for an automotive computer.

ELECTROLYTE—Liquid that surrounds the plates of a battery and allows a free flow of electrons.

ELECTRONIC ADVANCE—A system that uses sensor input and the computer of the vehicle to control spark timing.

ELECTRONIC IGNITION SYSTEM—One that uses an electronic control circuit and distributor pickup coil.

ELECTRONIC IGNITION TESTER—Instrument use to identify source of ignition problems.

ELECTRONIC MODULES—Small computers in a vehicle, used for specific systems (such as anti-lock brakes).

ELECTRONIC REGULATOR—Solid-state regulator separate from the alternator.

ELEMENT—One of the cells that can be combined to form a battery.

EMERGENCY BRAKE—Mechanical means of applying the rear brakes.

EXTENSION HOUSING—A separate housing bolted to the transmission housing, containing the output shaft and rear oil seal.

FACE—Area of a gear tooth above the pitch line.

FAST CHARGER—One that provides a high current flow for quickly recharging a battery.

FIELD FRAME—Housing on a motor that holds the field coils.

FIXED CALIPER—Brake caliper rigidly mounted to the steering knuckle.

FLOATING CALIPER—Brake caliper mounted on two rubber bushings, allowing some movement.

FORWARD BIAS—Arrangement in which a diode acts as a conductor.

FRAME—The strong steel structure that supports the body of the vehicle.

FRONT DRIVE AXLES—Shafts that transfer power from the transaxle differential to the wheels of the vehicle.

FULLY SYNCHRONIZED TRANSMISSION—One in which all forward gears are equipped with synchronizers to allow downshifting while in motion.

FUSE—A device that interrupts current if a circuit is overloaded or a short occurs.

FUSE BLOCK—A boxlike unit that holds the fuses for the various electric circuits in a vehicle.

FUSIBLE LINK—A type of circuit protector in which a special wire melts to open the circuit when current is excessive.

GEAR BACKLASH—Small amount of clearance between meshing gear teeth.

GEARBOX OVERHAUL—The disassembly, cleaning, adjusting, and replacing parts as necessary.

GEARBOX RATIO—The relationship (number of turns) between the steering wheel and the sector gear.

GEAR CLASH—Noise that is heard when gears fail to mesh properly in a manual transmission.

GEAR OIL—A high viscosity oil (80W or 90W) used for manual transmissions and differentials.

GEAR RATIO—The number of rotations a driving gear must make while the driven gear is completing one revolution.

GEAR REDUCTION—The situation in which a small gear is used to drive a larger gear with an increase in torque as a result.

GRABBING BRAKES—Abrupt, hard application of brakes when the brake pedal is slightly depressed.

GREASE SEAL—Component that prevents lubricant leaking from the axle assembly into the steering knuckle or bearing support.

GROUND—The return path for current in an electrical circuit.

GROWLER—Testing device used to check armatures for shorts.

HALL EFFECT—A type of pickup used with many electronic ignition systems.

HALOGEN LAMP—One with a small, high intensity halogen lamp inside a conventional sealed housing.

HARD STEERING—Greater than normal effort required to turn the steering wheel.

HARD TO SHIFT—A manual transmission problem often caused by damaged or sticking linkage.

HARSH SHIFTS—Transmission changes gears in a jerky manner.

HEADLAMP SYSTEM—Components, such as battery, switches, fuses, and lamps that make up the headlamp lighting circuit.

HEADLIGHT AIMER—A device used to adjust headlights to specific positions.

HEADLIGHT AIMING SCREEN—Set of measured lines on a wall, used to adjust headlight aim.

HEAT SINK—A device for absorbing heat from one medium and transferring it to another.

HORN RELAY—A relay connected between the battery and the horn.

HOTCHKISS DRIVE—Open drive shaft that operates a rear axle assembly mounted on springs. The most common rear wheel drive type.

HOT PLUG—A spark plug with a long insulator tip, often used in older engines.

HUB—Mounting place for a vehicle wheel on the end of the axle or spindle.

HYDRAULIC BRAKE BOOSTER—Braking system booster actuated by hydraulic pressure from the power steering pump.

HYDROMETER—Tool used to test for specific gravity (and thus, battery charge).

IDLER ARM—A link that supports the tie rod and transmits steering motion to both wheels through the tie rod ends.

IGNITION COIL—Device used to produce the high voltage needed for ignition spark.

IGNITION COMPUTER—ECM that controls ignition timing, based on sensor input.

IGNITION DISTRIBUTOR—Component that directs coil voltage to each spark plug at the appropriate time.

IGNITION RESISTOR—A resistance connected into the primary circuit to reduce battery voltage to the coil during engine operation.

IGNITION SWITCH—The switch in the ignition system that opens and closes the ignition-coil primary circuit.

IGNITION SYSTEM—Components that produce a spark to ignite the air-fuel mixture in the engine.

IGNITION TIMING—How early or late the spark plugs fire in relation to piston position.

IMPELLER—Pump component with fanlike blades that spins inside a housing to move liquid.

INCORRECT CAMBER—Condition that produces wear on one side of the tire tread.

INCORRECT TOE—Condition that produces a feathered edge on the tire tread.

INDEPENDENT SUSPENSION—System that permits each wheel to move up and down without seriously affecting any other wheel.

INFLATION PRESSURE—The amount of air pressure that a tire can safely handle.

INLET STUB SHAFT—Section of front drive axle that is splined to differential gears. It is connected to the interconnecting shaft through a universal joint.

INPUT—The information provided to a computer by a sensor.

INPUT SHAFT—Metal shaft that transfers motion from the engine (via the clutch) to the transmission.

INSULATED CURRENT RESISTANCE TEST—Check of all parts between the battery positive and the starting motor for excess resistance.

INSULATOR—A material that resists the flow of electrons.

INTEGRAL POWER STEERING—A system in which the hydraulic piston is mounted inside the gearbox.

INTEGRAL REGULATOR—A regulator that is mounted in or on an alternator.

INTEGRATED CIRCUIT—A tiny "chip" of silicon, containing complete electronic circuits.

INTERCONNECTING SHAFT—Component of front drive axle that connects the inner and outer universal joints.

JOUNCE BUMPER—Rubber blocks that keep suspension parts from hitting the frame when the vehicle encounters large bumps or holes.

JUMPS OUT OF GEAR—A manual transmission problem in which the transmission will unexpectedly disengage and move into neutral.

JUMP STARTING—Providing current to a vehicle with a dead battery by connecting cables to the battery of an operating vehicle.

KICKDOWN VALVE—Component that causes an automatic transmission to shift down into a lower gear during fast acceleration.

KNUCKLE—A steering knuckle; a front suspension part that acts as a hinge to support a front wheel and permit it to be turned to steer the vehicle.

LATERAL RUNOUT—Side-to-side movement of a wheel or tire.

LEAF SPRING—Flat pieces of spring steel that are stacked and bound together. Normally used as a part of the rear suspension of the vehicle.

LIMITED SLIP DIFFERENTIAL—One that provides driving force to both rear wheels at all times.

LIMITED SLIP DIFFERENTIAL CHATTER—Sound made when turning a comer, caused by sticking and releasing of clutches in the differential.

LINER—Thin rubber layer bonded to plies and forming the inside surface of the tire.

LOAD RATING—The maximum amount of weight a tire can carry when inflated to the recommended pressure.

LOCKED IN GEAR—A manual transmission problem often caused by damaged or sticking linkage. Broken gear teeth can also be at fault.

LOCKING HUB—Components that transfer power from the driving axles to driving wheels on a four-wheel drive vehicle.

LOCK-UP CONVERTER—A variation of the fluid coupling with an internal friction clutch mechanism. It "locks up" in high gear, improving fuel economy.

LOW BRAKE PEDAL—Farther than normal brake pedal travel before braking begins.

LUG NUT—Large steel nuts, used to hold a wheel into the axle hub.

LUG STUD—Special bolts that are press-fit into the axle hub and accept lug nuts to mount the wheels of the vehicle.

MACPHERSON STRUTE—Suspension system that uses one control arm and one strut for each wheel.

MAGNETIC FIELD—Field of force generated around an electrical conductor.

MAGNETIC SENSOR—One that uses part movement (such as rotation) and induced current to produce a signal for a computer.

MAIN COMPUTER—The largest and most powerful microprocessor in a system of the vehicle.

MAINTENANCE-FREE BATTERY—One without removable filler caps that does not require periodic filling with water.

MANUAL BLEEDING—A method of system bleeding using only the master cylinder.

MANUAL TRANSAXLE—One with a manual (driver-operated) transmission.

MANUAL VALVE—In an automatic transmission, a valve actuated by the gearshift lever that routes oil pressure to the components required for the selected gear.

MASTER CYLINDER—Hydraulic piston type pump that develops pressure for the braking system.

MILKY FLUID—Condition caused by contamination of transmission fluid by engine coolant.

MINIMUM DISC THICKNESS—Thinnest rotor dimension allowed for proper and safe operation of disc brakes.

MOVABLE POLE SHOE—Device that uses a yoke lever to move the pinion gear into contact with the flywheel.

MULTIPLE DISC CLUTCH—One with several discs that can be used to drive planetary gearsets.

MUSHY SHIFT—Transmission changes too slowly.

NEUTRAL SAFETY SWITCH—Switch that prevents engaging the starter when the vehicle is in gear.

NEUTRAL SAFETY SWITCH ADJUSTMENT—Altering position of the switch to permit starting of the engine when gear selector is in the PARK position.

NONDRIVING HUB—One that rotates freely on spindles (axle ends).

NONINDEPENDENT SUSPENSION—System in which wheels are attached to each end of a solid axle.

OHM'S LAW—A simple formula for computing unknown electrical values when two values are known.

ONE-WIRE CIRCUIT—One that uses the vehicle frame as a return wire to the power source.

OPEN CIRCUIT—Electrical circuit with a gap or break in continuity so that current cannot flow.

OPEN LOOP—Control system using preset values in the computer to operate the engine.

OUTBOARD CV-JOINT—The outer universal joint on a front-wheel drive vehicle.

OUTER STUB SHAFT—In a front-wheel drive vehicle, the short shaft connecting outer universal joint and the front-wheel hub.

OUTPUT—The signal sent by a computer as a result of processing inputs it has received.

OUTPUT SHAFT—Transmission shaft on which the output gears are mounted.

OUTPUT SHAFT GEARS—Gears that turn the output shaft of a manual transmission.

OVERDRIVE RATIO—The situation in which a large gear is used to drive a smaller gear with an increase in speed as a result.

OVERRUNNING CLUTCH—Device that locks a pinion gear in one direction and releases it in the other.

PACKING WHEEL BEARINGS—Filling the bearing shells with grease to prevent excessive wear.

PARKING PAWL—A latch that locks the transmission so that the vehicle will not roll when the selector lever is in the PARK position.

PEDAL FREE PLAY—The amount of brake pedal movement before braking action begins to take place.

PEDAL HEIGHT—Distance of the brake pedal above the floor of the vehicle.

PICKUP COIL—Component that sends pulses to the control unit of an electronic ignition system as a result of trigger wheel action.

PICKUP COIL AIR GAP—The space between the pickup coil and the trigger wheel tooth.

PILOT BEARING—The bushing or bearing that supports the forward end of the transmission input shaft.

PINION GEAR—Differential gear turned by the drive line. It meshes with the ring gear. Also, a gearbox component that meshes with the rack gear or a small gear on a starter motor that engages a larger gear to rotate the engine flywheel.

PINION GEAR BEARING PRELOAD—Degree of tightness of bearings, adjusted by compressing a spacer or using shims.

PINION GEAR CLEARANCE—Distance between the pinion gear and drive end frame when the gear is engaged.

PINION GEAR DEPTH—The distance the pinion gear extends into the carrier to mesh with the ring gear.

PINION PILOT BEARING—A bearing used to support the pinion gear in the differential.

PINION SHAFT—Shaft holding the two differential idler (pinion) gears.

PITCH LINE—Imaginary line along the center of a gear tooth.

PITMAN ARM—Component that transfers gearbox motion to the steering linkage.

PITMAN SHAFT OVER-CENTER ADJUSTMENT—Adjustment of clearance between the sector gear and the ball nut teeth in a recirculating ball gearbox.

PLANETARY GEARSET—A set of gears consisting of several "planet" gears rotating around a central "sun" gear.

PLUG GAP—Distance between the center and side electrodes on a spark plug.

PLUG HEAT RANGE—Numeric indicator of how hot a spark the plug will develop.

PLUG REACH—Length of the threaded portion of a spark plug.

PLY SEPARATION—Pulling apart of tire plies as a result of overheating due to under inflation or other causes.

POLE PIECE—Magnetic component of a motor that keeps the armature rotating.

POWER STEERING FLUID—A hydraulic oil, usually automatic transmission fluid.

POWER STEERING PRESSURE TEST—Use of a pressure gauge to check pump and associated components for correct pressure.

POWER STEERING PUMP—Unit that provides the hydraulic pressure needed in a power steering system.

POWER TRAIN—Gearing system and other components used. to transfer energy from the engine to the wheels of the vehicle.

PRESSURE BLEEDING—A method of system bleeding using additional pressure supplied by an external air tank.

PRESSURE PLATE—Spring-loaded device that clamps the clutch disc against the flywheel.

PRESSURE PLATE COVER—Lid that bolts on the pressure plate to hold various components in place.

PRESSURE PLATE FACE—A large ring that contacts the friction disc as the clutch engages.

PRESSURE PLATE RELEASE LEVERS—Levers hinged inside the pressure plate that help move the pressure plate face away from the clutch disc and flywheel.

PRIMARY AND SECONDARY SHOES—Front and back shoes in a drum brake system. The secondary shoe has a larger surface area.

PRIMARY CIRCUIT—In an ignition system, all components are operating on battery (low) voltage.

PRIMARY WIRE—Small insulated conductor that carries battery or alternator voltage.

PROPORTIONING VALVE—Valve designed to equalize pressure at the wheel cylinders on vehicles with front disc and rear drum brakes.

PULLING BRAKES—Situation in which a vehicle veers to one side when the brakes are applied.

QUICK CHARGE TEST—A method of determining whether battery plates are sulfated (no longer able to hold a charge).

RACK AND PINION STEERING GEAR—A steering gear in which a pinion of the end of the steering shaft meshes with a rack of gear teeth on the major cross member of the steering linkage.

RACK AND PINION STEERING GEAR ADJUSTMENT—Tightening or loosening rack adjustment screw as needed for optimum steering.

RADIAL RUNOUT—Uneven rotation caused by differences in diameter.

RADIAL TIRE—One that has cord plies running straight across, from bead to bead. Additional stabilizer plies are placed beneath the tread.

READING SPARK PLUGS—Determining cause of a problem by examining condition of the spark plug.

READING TIRES—Identifying alignment, suspension, and other problems through the wear patterns on tire treads.

REAR AXLE ASSEMBLY—A combination of gears and axles converting rotary motion of the drive shaft to forward or backward motion of a vehicle.

REAR AXLE RATIO—The relationship between the numbers of teeth on the pinion gear and ring gear. Ratio affects acceleration, pulling power, and fuel economy.

REAR DRIVE AXLE ASSEMBLY—Differential, axles, and other components transferring power from the drive line to the rear wheels.

REAR DRIVE AXLES—The components that transmit power from the differential gears to the wheels.

RECIRCULATING BALL—Most common type of gearbox used with linkage steering system.

RECTIFIED—Term used to describe ac current that has been changed to dc.

REDUCTION STARTER—One that uses extra gears to increase the torque applied to the flywheel gear.

REGULATOR BYPASS TEST—Test that connects full battery voltage to the alternator field, leaving the regulator out of the circuit.

REGULATOR VOLTAGE TEST—Test the charging system under low output, low load conditions.

RELAY —Electrically operated switch.

RESERVE CAPACITY RATING—The amount of time a battery will continue to provide as acceptable current flow when not being recharged by the alternator.

RESERVE DISTANCE—Amount of travel remaining between pedal and floor when the brakes are applied.

RESISTANCE—Opposition to current flow.

RESISTANCE PLUG WIRE—Special type of spark plug wire that eliminates most radio interference.

RETRACTING AND HOLD-DOWN SPRINGS—Springs that pull the shoes away from the brake drum surface when the pedal is released.

REVERSE BIAS—Arrangement in which a diode acts as an insulator.

REVERSE IDLER SHAFT—Shaft in a manual transmission on which the reverse idler gear is mounted.

REVERSE POLARITY—Accidental backward connection of primary wires.

RING AND PINION BACKLASH—The amount of space between the meshing gear teeth.

RING AND PINION NOISE—Whining or howling sounds that change pitch with speed change, usually cause by wear or damage to differential components.

RING GEAR—Large gear in the differential that is driven by the pinion gear and, in turn, drives the spider gears.

RING GEAR RUNOUT—The amount of wobble that occurs as the gear rotates.

ROLLING RESISTANCE—A measure of the amount of resistance that is generated as a tire rolls on the road surface.

ROTOR—A rotating contact inside the distributor that routes electrical pulses from the coil to the spark plugs. Also, the metal disc against which brake pads are forced to stop a vehicle.

ROTOR CURRENT TEST—Method used to check alternator windings for an internal short.

ROTOR WINDING OPEN—An open (broken) winding in an alternator rotor.

ROTOR WINDING SHORT—A short-to-ground fault in an alternator rotor.

RZEPPA CV-JOINT—Ball-and-cage type constant velocity joint used on front-wheel drive vehicles.

SAFETY RIM—Wheel designed with small ridges that holds a tire in place if a blowout or flat occurs.

SECONDARY CIRCUIT—In an ignition circuit, all components are operating on coil (high) voltage.

SECONDARY WIRE—Wire used in a vehicle ignition system. It carries high voltage from the coil to the spark plugs.

SECONDARY WIRE RESISTANCE—A test performed to check condition of a spark plug or coil wire.

SECTOR SHAFT—Output gear in a recirculating ball gearbox.

SEMICONDUCTOR—Substance that acts as an insulator or conductor, depending upon conditions.

SENSOR—Device that monitors and reports a condition to the vehicle computer.

SENSOR ROTOR—A toothed wheel that operates at the same rpm as the vehicle wheel.

SEPARATOR—An insulating material placed between the plates of a battery.

SERVO—Piston that operates a band in an automatic transmission.

SERVO ACTION—Situation in which the primary shoe of a drum brake system helps apply the secondary shoe.

SHAFT RUNOUT—Wear or damage (bending), causing a shaft not to run true around its axis.

SHIFT FORK—Device that physically moves the synchronizer and gear together as a result of shift lever movement.

SHIFT LEVER—The handle operated by the vehicle operator to shift from gear to gear manually.

SHIFT LINKAGE ADJUSTMENT—Making sure the transmission linkage positions match the gear selector positions.

SHIFT RAIL—A manual transmission linkage that is contained within the transmission case.

SHOCK ABSORBER—Device that uses air or hydraulic pressure to dampen up-and-down motion of a vehicle.

SHORT CIRCUIT—Excess current flow that occurs when a conductor touches ground.

SHORTED CONDENSER—One with a direct electrical connection to ground.

SIDEWALL—Portion of a tire between the tread and bead.

SIMPLE CIRCUIT—One consisting of a power source, a load, and conductors.

SLOW CHARGER—One that feeds a small current into the battery over a long period of time.

SOLENOID ACTUATOR—One with a moving metal core that is actuated by an induced magnetic field.

SPARK PLUG—Devices that emit an electrical arc at the tip to ignite the air-fuel mixture in an engine cylinder.

SPARK TEST—Check of the spark intensity (brightness and length of arc).

SPECIFIC GRAVITY—Weight or density of a liquid.

SPIDER GEARS—Idler and axle gears in the differential that drive the rear axles of a vehicle.

SPINDLE—Stationary shaft used to support rotating wheel assembly on nondriving wheels.

SPONGY BRAKES—Braking system that is "soft" feeling, usually as a result of air trapped in the hydraulic system.

SPRING RATE—The stiffness or tension; amount of weight required to compress or bend a spring.

STARTER CURRENT DRAW TEST—Starting test that establishes the number of amps used by the starting system.

STARTER GROUND CIRCUIT RESISTANCE TEST—Check of all parts between the battery negative and the starting motor.

STARTER MOUNTED SOLENOID—One with a plunger that moves to engage the pinion gear with the flywheel gear.

STARTER RELAY—Device that uses a small current flow from the ignition switch to control a larger current flow to the starter solenoid.

STARTER SOLENOID—A high current relay that energizes the starter motor.

STARTING HEADLIGHT TEST—Starting test conducted with the headlights turned on to provide a load on the battery.

STARTING SYSTEM—Electric motor and other components used to rotate the engine until it starts.

STATIC IMBALANCE—Lack of balance that causes a wheel to vibrate up and down as it rolls.

STATOR—The stationary magnetic field in a generator. Also, component of a torque converter that improves oil circulation and thus, torque.

STATOR TEST—Ohmmeter check for open and shorted windings in the stator.

STEERING AXIS INCLINATION—Angle formed by the inward tilt of the ball joints, kingpin, or struts.

STEERING COLUMN—Assembly consisting of the steering wheel, steering shaft, ignition key mechanism, and associated parts.

STEERING GEARBOX—Gear assembly that turns rotary motion into linear (straight line) left-right motion.

STEERING KNUCKLE—Component that provides support for the wheel spindle or bearings surrounding an axle.

STEERING LINKAGE—Components connecting the steering gearbox to the steering knuckles.

STEERING SHAFT—Component that transfers turning motion from the steering wheel to the steering gearbox.

STEERING SYSTEM—The components that allow the operator to change direction of a vehicle.

STEERING WHEEL PLAY—Excessive movement of the steering wheel without causing any front-wheel movement.

STIFF CLUTCH PEDAL—A condition caused by binding or other restriction in the clutch mechanism, making the pedal hard to depress.

STRUT ASSEMBLY—Suspension component combining shock absorber, coil spring, and upper damper unit. It replaces the upper control arm.

STRUT CARTRIDGE—Replaceable shock absorber unit on a MacPherson strut.

STRUT ROD—Rod that fastens to the control arm and frame to keep the control arm properly oriented.

SUSPENSION SYSTEM—Components that let the wheels move up and down without body movement.

SWAY BAR—A stabilizer that keeps the vehicle body from leaning excessively in turns.

SYNCHRONIZER—Assembly of hub, sleeve, and other components that locks the selected output gear to the output shaft to transmit power. It permits meshing of gears with grinding.

TERMINALS—The positive and negative posts or threaded connectors on a battery.

THROW-OUT BEARING—Bearing that decreases friction between the clutch fork and pressure plate.

TIE ROD—Connectors between rack ends and steering knuckles.

TIMING ADVANCE—Making the spark plug fire sooner in the compression stroke.

TIRE—The casing-and-tread assembly that is mounted on a vehicle to provide pneumatically cushioned contact and traction with the road.

TIRE BEAD—Wire ring encased in rubber that helps hold the tire sidewall against the rim.

TIRE IMPACT DAMAGE—Punctures, cuts, or tears caused by running over debris in the road.

TIRE MARKINGS—Information shown on the sidewall to indicate inflation pressure, load-carrying ability, size, and other data.

TIRE PLY—Layer of fabric or other material that forms the carcass or body of the tire.

TIRE ROTATION—Moving tires to different wheels periodically to even out wear.

TIRE WEAR ANGLE—Usually, a reference to camber because tilting the wheels puts more load on one side of the tire tread than on the other side.

TIRE WEAR PATTERN—Areas of tread that are worn off, which can provide information on causes of wear.

TOE—Degree to which opposing wheels are on converging or diverging lines (not parallel). Also, the narrow part of a gear tooth.

TOE-OUT ON TURNS—Steering feature that turns the inside wheel more sharply than the outside wheel.

TORQUE CONVERTER—Fluid coupling that acts as a clutch on an automatic transmission.

TORQUE MULTIPLICATION—Variation in torque achieved by turning the impeller of a torque converter faster than the turbine.

TORQUE TUBE—A solid steel drive shaft enclosed in a hollow tube with a single swivel joint at the front.

TORSION BAR—Spring steel rod that operates by twisting and untwisting.

TORSION SPRINGS—Small coil springs that help absorb the shock and vibration that occur when the clutch engages.

TRACKING—The position or direction of the front wheels in relation to the rear wheels.

TRACK ROD—Metal rod used to prevent axle side-to-side movement when cornering.

TRAM GAUGE—Instrument used to compare distances between the front and rear set of tires for toe adjustment.

TRANSAXLE—A combination of transmission and differential in one case, used on front-wheel drive vehicles.

TRANSAXLE DIFFERENTIAL—Transaxle assembly that transfers torque to the driving wheels and allows them to rotate at different speeds.

TRANSAXLE GEARBOX—The transmission section of the transaxle, housing the forward and reverse gears.

TRANSAXLE INPUT SHAFT—Main shaft that turns the gears in a transaxle.

TRANSAXLE OUPUT SHAFT—Shaft that transfers power to the ring and pinion gears of the differential.

TRANSFER CASE—A power takeoff unit that sends power to both the front and rear axle assemblies on a multiwheel drive vehicle.

TRANSISTOR—Tiny electronic component that functions as a switch, but has no moving parts.

TRANSMISSION CASE—Metal housing surrounding and supporting the transmission.

TRANSMISSION COOLER—A small separate radiator, used to cool transmission oil in vehicles pulling heavy loads.

TRANSMISSION LINKAGE—System that connects the shift lever with the transmission shift forks.

TRANSMISSION OIL COOLER—Small tank within the radiator, used to regulate transmission fluid temperature.

TRIGGER WHEEL—Rotating component with one tooth for each cylinder.

TRIPOD CV-JOINT—Constant velocity joint used on front-wheel drive vehicles, consisting of a spider and ball arrangement inside a housing.

TUBELESS—A tire that does not have a separate inner tube to hold air.

TURBINE—The driven fan in a torque converter.

TURNING—Tem, usually used for machining a brake drum or rotor, since this process is carried out on a lathe.

TURNING RADIUS GAUGE—Instruments that measure how many degrees left or right the front wheels are turned.

U-JOINT ALIGNMENT MARKS—Scribed marks made on U-joint components before disassembly, allowing the joint components to be reassembled in the same positions to avoid possible imbalance and vibration.

UNDER INFLATION—Operating tires with a lower than recommended air pressure.

UNIBODY—A vehicle structure in which the body and frame are one unit.

UNIVERSAL JOINT—A flex joint allowing limited up-and-down and side-to-side movement.

UNSPRUNG WEIGHT—The weight of the vehicle parts that are not supported by the springs, such as the wheels.

VACUUM ADVANCE—A mechanism on the ignition distributor that uses intake manifold vacuum to advance the timing of the spark to the spark plugs.

VACUUM MODULATOR—A device that modulates, or changes, the main-line hydraulic pressure in an automatic transmission to meet changing engine loads.

VALVE BODY—Housing that contains most of the valves used in operation of an automatic transmission.

VALVE CORE—A threaded air valve that screws into place in a valve stem.

VALVE STEM—A rubber inflation tube with a threaded metal core that snaps into a hole on the rim of a wheel designed for tubeless tires.

VALVE STEM CAP—A cap placed over the end of the valve stem to prevent stem wear.

VOLTAGE—Electrical pressure that causes current flow.

VOLTAGE DROP—Reduction of the amount of current flowing in a circuit.

VOLTGAE DROP TEST—Starting system test that identifies parts showing high resistance.

VOLTAGE REGULATOR—Device used to control alternator output.

WEAR BAR—Solid bars of rubber across the tread that appears when a tire has worn to an unsafe limit.

WET CHARGED—Battery that is filled with electrolyte and fully charged at the factory.

WHEEL ALIGNMENT—Adjusting wheels of a vehicle to roll in a straight line.

WHEEL BEARING—Ball or roller bearing assemblies that reduce friction as wheels or axles rotate.

WHEEL BRAKE ASSEMBLIES—Components that use hydraulic pressure to apply friction for stopping a vehicle.

WHEEL CYLINDER—Hydraulic piston that actuates braking at each wheel.

WHEEL HOP—A bouncing or up-and-down movement.

WHEEL SHIMMY—A side-to-side movement caused by dynamic imbalance.

WHEEL SPEED SENSORS—Magnetic pickups to detect wheel speed (used on anti-lock braking systems).

WHEEL WEIGHT—Small pieces of lead that are clipped to the wheel rim to balance the wheel and tire combination.

WINDING—Loop or wire on a motor armature that generates a magnetic field.

WIRING DIAGRAM—Drawings that show relationships of components in an electrical circuit.

WIRING HARNESS—A group of primary wires enclosed in a protective plastic covering.

WORM SHAFT—Input gear in a recirculating ball gearbox.

APPENDIX II

REFERENCES USED TO DEVELOP THIS TRAMAN

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Although the following references were current when this TRAMAN was published, their continued currency cannot be assured. When consulting these references, keep in mind that they may have been revised to reflect new technology or revised methods, practices, or procedures. You therefore need to ensure that you are studying the latest references.

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INDEX

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